

A Peloric Form of *Cymbidium nagifolium* (Orchidaceae)

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A new, peloric form of *Cymbidium nagifolium* Masam., discovered within a population in Miyazaki Prefecture, southern Japan, is described. The peloric form can be categorized as Type B peloria where the labellum is replaced by a third petal resembling the lateral petals. The mutation may be widespread within the population, since three individuals from different locations had peloric flowers.

Key words: *Cymbidium nagifolium* f. *conforme*, Orchidaceae, peloric variation

The Orchidaceae are one of the most species-rich and morphologically diverse plant families (Jersáková *et al* 2006, Ramírez *et al* 2007). Orchid flowers have always fascinated biologists (Cozzolino & Widmer 2005), largely because of their complex floral innovations. Orchids usually have zygomorphic flowers characterized by an outer whorl of three sepals and an inner whorl of three petals, as in most monocots. The sepals are often differentiated into a large, showy dorsal, or medial, sepal and two lateral sepals. Two lateral petals flank the often extremely enlarged third petal, known as a labellum. The labellum serves as a landing platform for pollinators (Rudall & Bateman 2002).

While orchid flowers are usually zygomorphic and bilaterally symmetrical, rare mutations occur and variants with actinomorphic flowers may develop. The actinomorphic mutant flowers are more commonly called peloria (Rudall & Bateman 2002). Peloric variants, such as in *Eleocharis japonica* (A. Gray) F. Maek. var. *conformis* (F. Maek.) F. Maek. ex H. Hara & M. Mizush. and *Epipactis thunbergii* A. Gray f. *subconformis* Sakata, have already been discovered in Japan.

During a recent field survey, I found several individuals of *Cymbidium nagifolium* Masam. in Miyazaki Prefecture, southern Japan. I took 3 of approximately 10 plants growing several dozen

meters away from each other over an area of approximately 30 m by 200 m to cultivate in the laboratory. When the plants bloomed, the lips were undifferentiated perianth segments. While the floral morphology of orchids sometimes differs, even within the same individuals (Peter & Johnson 2009), all of the flowers of the three individuals in cultivation were peloric. I could not precisely estimate the frequency of the mutant form within the population, but because 3 individuals collected from different locations were peloric, the mutation may be widespread within the population. I therefore describe a new form of *C. nagifolium* as an additional case of peloric mutants in Japanese orchids. The mutation can be categorized as Type B peloria, where the labellum is the same as the lateral petals (Rudall & Bateman 2002).

Peloric mutants can recur, and may reproduce via seeds in certain circumstances (Burns-Balogh & Bernhardt 1988, Teppner & Klein 1998, Hedrén *et al* 2000), which means that they can establish lineages that are sufficiently long-lived to be legitimately recognized as distinct species (Rudall & Bateman 2002). Unfortunately, information on biological differences—such as pollination biology between normal and peloric forms—remains largely unknown. It is worth testing whether the frequency of pollinator visits,

species assemblage of pollinators, and the ability to self-fertilize differ from the normal form of *C. nagifolium*.

Taxonomic treatment

***Cymbidium nagifolium* Masam. f. *conforme* Suetsugu, *forma nov.* —Fig. 1A–E.**

Cymbidium nagifolium f. *conforme* differs from f. *nagifolium* only in its peloric flowers, where the labellum is replaced by a third petal resembling the lateral petals.

Typus. Japan, Miyazaki Pref., Koyu-gun, Mera, 15

July 2012, *Kenji Suetsugu 2012-1*, (Holotype: KYO). The type specimen was collected from a cultivated plant that had been transplanted to the laboratory on February 25, 2012.

Japanese name. Hoshigata-nagi-ran, nov.

Distribution and notes. Currently, *Cymbidium nagifolium* f. *conforme* is known only in the type locality. The site is a dense forest dominated by *Castanopsis sieboldii* (Makino) Hatus. ex T. Yamaz. & Mashiba with sparse herbaceous understory.

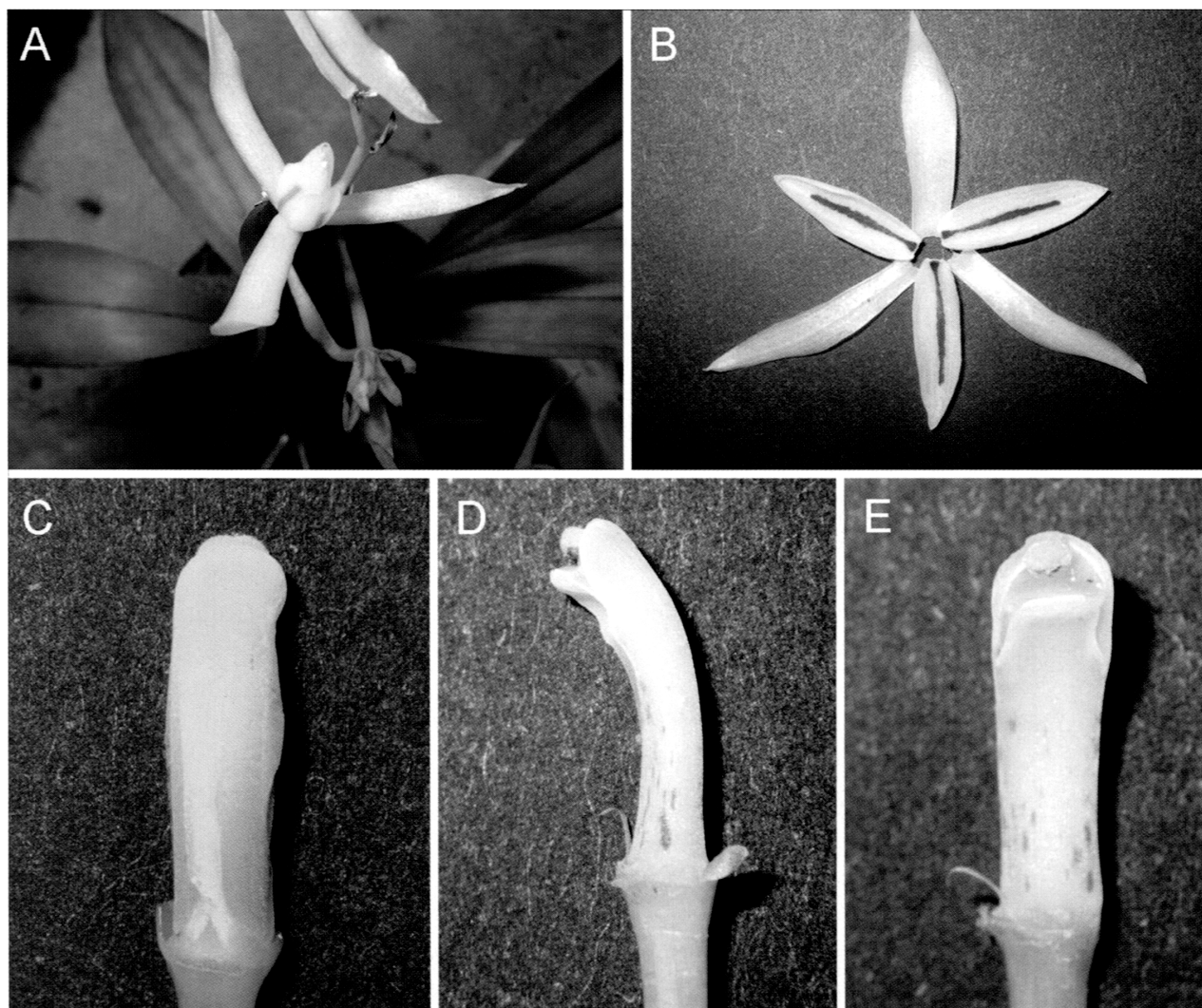


FIG. 1. *Cymbidium nagifolium* Masam. f. *conforme* Suetsugu (A) flowering individual, (B) sepal and petal, (C) dorsal view of column, (D) side view of column and (E) ventral view of column. Photographs taken on July 15, 2012.

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